

Koch, Kristine

From: Carl Stivers <cstivers@anchorqa.com>
Sent: Wednesday, July 01, 2015 2:30 PM
To: Koch, Kristine; Bob Wyatt; Jim McKenna (jim.mckenna@verdantllc.com)
Cc: Allen, Elizabeth; Jen Woronets; Matt Henderson
Subject: RE: Portland Harbor FS
Attachments: Pages from 2012-03-20_Appendix Hc.pdf

Kristine – Please see a response on this question from Matt Henderson (the technical lead on the capping appendix of the 2012 draft FS) below. Thanks.

Kristine -

Here are the coefficients we used for the stable particle size calculation in the 2012 draft FS:

S_f = safety factor = 1.1 (from Maynard 1998)

C_s = stability coefficient for incipient failure = 0.3 for angular rock (from Maynard 1998)

C_v = velocity distribution coefficient = 1.0 for straight channels (from Maynard 1998)

C_T = blanket thickness coefficient = 1.0 for flood flows (from Maynard 1998)

C_G = gradation coefficient = $(D_{85}/D_{15})^{1/3} = 2$ (conservatively assumed for well-graded materials)

D = water depth in feet (from the hydrodynamic model)

γ_s = unit weight of stone = 165 lbs/ft³

γ_w = unit weight of water = 62.4 lbs/ft³

V = maximum depth-averaged velocity in feet per second (from the hydrodynamic model)

K_1 = side slope correction factor = 0.88 (from Plate B-39 from USACE 1994 conservatively assuming a slope of 2H:1V)

g = acceleration due to gravity = 32.2 ft/s²

As noted in the appendix these inputs are consistent with the recommendations of the references cited in the appendix (and copied below).

References:

Maynard 1998. "Appendix A: Armor Layer Design for the Guidance for In-Situ Subaqueous Capping of Contaminated Sediment." EPA 905-B96-004, Great Lakes National Program Office, Chicago, IL.

USACE, 1994. Hydraulic Design of Flood Control Channels. Engineer Manual 1110-2-1601, Washington, D.C. June.

Let me or Carl Stivers know if you have any additional questions.

Thanks,

Matt

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From: Koch, Kristine [mailto:Koch.Kristine@epa.gov]

Sent: Friday, June 26, 2015 3:25 PM

To: Bob Wyatt; Jim McKenna (jim.mckenna@verdantllc.com); Carl Stivers

Cc: Allen, Elizabeth

Subject: Portland Harbor FS

Bob, Jim and Carl, Please provide the input values you used for the equation in the attached extracted page from Appendix Hc. If it resides somewhere in the draft FS, please direct me to where that information is located.

Thanks,

Kristine Koch

Remedial Project Manager

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